



INDIANA OFFICE OF ENERGY AND DEFENSE DEVELOPMENT



Services & Support Business Plan

November 2007

SERVICES & SUPPORT HIGH LEVEL BUSINESS PLAN

Services & Support involves the provision of products and services that enhance the usefulness and extend the life of current military, homeland security, and aerospace platforms. Collaboratively, Indiana companies will respond to requests from the Military Commands dealing with the battle space and its supply chain to provide responsive, ingenious, and effective solutions for repair, system enhancement, manufacturing process improvement, testing, inspection, quality assurance, failure analysis, adaptation to new uses, and field support. This focus area takes advantage of native skill sets that are oriented to problem solving. The ability to resurrect an existing system, weapon, or support equipment and even enhance its functionality is especially valuable to the military in this time of war. The current trend in the military is to stretch out the time between system replacement with a new generation makes keeping existing systems useful much more important. Indiana's rich engineering services, such as failure analysis, failure prediction, and component redesign, can reduce the likelihood of failure and reduce field maintenance costs.

DETAILED DESCRIPTION:

These services include technology insertion, end of life replacement parts, ultra-machined retrofits, aftermarket parts, composites, and new functions in existing packaging. The collaboration also seeks to find companies to assume the supply, repair, and enhancement responsibility for orphan and alien parts and assemblies.

This focus area meets military needs to avoid being in the maintenance/enhancement business and to provide highly-scalable solutions under urgent theater of battle conditions. Of particular concern are legacy systems where the broken part may not be stocked anymore or does not meet new regulations/specifications. In order to return the legacy system to action, it is necessary to reverse engineer that part before the replacement can be made. To be cost effective, this may also involve using an obsolete machine tool and legacy skills to make the replacement part. The ability to respond quickly involves skills in sustainment engineering and obsolescence management that can help a company become the vendor of last resort. Another key service is to provide feedback on supportability when designing new system. Yet another important driver is in returning the military asset to functioning status quickly.

A similar need exists in Homeland Security for its agencies, such as the Coast Guard and the Border Patrol. Knowledge assets needed in this focus area are: Rapid Prototyping, Materials Engineering especially Composites, Nanotechnology, Ultra precision machining, FAA Qualified procedures, Failure Analysis, Computer programming, Embedded Systems, and Life Cycle Support.

IMPORTANCE FOR INDIANA TO FOCUS AND COLLABORATE ON SERVICES & SUPPORT

DOD and Homeland Security are increasingly relying on fielded equipment to get the job done. This has been reflected in the DOD budget's shift from new programs to Operations and Maintenance as related in Part 2 of the Defense Assets report. This interestingly mirrors the trend in Indiana's manufacturing industry from new platforms and major subsystems with the focus of R&D to product enhancement and service. For example, service for HumVees has become a booming business for AmGen. In addition, the major prime defense contractors who are in the state are natural hosts for Services and Support contracts to reduce administration overhead, management resource, and risk for the small businesses who will be participating in this focus area.

The fact that some subsystems are still developed in Indiana, like the jet engines and gas turbines at Rolls Royce and diesel engines at Cummins, will be helpful in getting a focus area like this jump-started, as it will provide services and support for them. This also helps those companies provide business to small companies under

contract guidelines. However, the ultimate customer will be the Defense Logistics Agency who oversees the product life cycle for DOD.

Indiana's strength lies in its expertise and excellence at translating an obsolete part/component into a modern functioning part. This applies to a large number of workers and firms. The advantage of this customer set is that the work will not be sent offshore.

The goal of the Services and Support focus action team is to make Indiana the thought leader and the standard setter for the Departments of Defense and Homeland Security in Life Cycle Support.

Table 31 below indicates the existence of known Services and Support assets in Indiana. However, it is estimated that there are thousands of similar assets spread around the state. The assets displayed here are spread throughout the state with major clusters in Lafayette (Purdue's Manufacturing-oriented centers), Fort Wayne (four prime contractors involved), the Crane area with Crane and two prime contractors, and a multitude of small specialty shops working mostly in automotive related specialties.

Table 1
INDIANA ASSETS

<u>University</u>	<u>Crane</u>	<u>Large Companies</u>	<u>Small Companies</u>	
PU Laser Based Manufacturing Center	Environmental Testing	Rolls Royce	Thermophysical Properties Research Laboratory	Anderson Tool & Engineering
PU Laser Micro-Fabrication Center	Contract Services	Cummins	Aerodine Engineering Group	Aerodyn Engineering
PU Materials Processing and Tribology Center	Failure Analysis	Navistar	E-A-R Specialty composites	HUPP Aerospace
PU Clean Manufacturing Technology and Safe Materials Center	Acquisition Logistics	AM Genearl	Smiths Aerospace	Air Bouyant
PU Production Control, Robotics, and Integration Software Skills	System Engineering	Raytheon	Allied Specialty Precision	Precision Piece Parts
PU, IU, and Notre Dame Composite Project	Reverse Engineering Services	ITT	Delaware Machinery	Kensington Machine Products
IPFW Center for Industrial Innovation and Design	Legacy System Manufacturing	Northrup Grumman	M4 Sciences	Prototype Development

PU Institute for Defense Innovation	Obsolescence Management	BAE Systems	Creative Coatings	CMW
		EG&G	Noel-Smyser Engineering	Techshot
		SAIC	Next Wave Systems	Logikos
		Honeywell Braking Systems	MSP Aviation	Thomas and Skinner
			Pyromation	Indiana Research Institute
			Makuta Technics	Burris Engineering
			SCHOTT	Incerco
			Damping Technologies	PTS Electronics
			Millennium Industries	Information- In-Place
			Manufacturing and Technology Center	Imaginestics
			DaVinci	Odyssian Technology
			Mudawar Thermal Systems	Trilithic
			GFT	MLM Enterprises
			Bentz Transport	Delaware Machinery & Tool
			TCM Network	Quality Steel Treating
			Total Concepts of Design	

These services and support assets can be leveraged to introduce enhanced legacy systems to units during exercises at the Muscatatuck Urban Warfare Center. Additionally, those units offer an excellent opportunity to create prototypes of these improvements and gain valuable feedback about use and possible improvement in preparation for re-introduction to combat units.

There is a foundation for immediate action as the following initiatives have been identified by the Hoosiers already involved in this focus area:

- Enhanced Support Facility for Distance Support
- Database of capabilities with image matching feature
- Repair Engineering curricula and Degree Programs
- Institute of Repair Excellence (“MASH”), extend with other services
- Reverse Engineering Center
- Repair Mentor Program
- Repair Certification Standards/Best Practices -common rules, tools, templates, procedures
- Exploration of possibility of obtaining a MANTECH center

There is also a crosscut of this focus area with the Defense Electronic, Future Alternative Energies, and Transportation Systems focus areas.

PROPOSED TEAM ACTION PLAN

IN YEAR ONE:

1. Institute a Public/Private clearinghouse as a neutral database. Clearinghouse becomes capable of recommending a list of companies that can meet a basic set of requirement.
2. Create a DB that could locate a company that could do work.
3. Produce a marketing plan to make key customers aware integrated with the State marketing plan.
4. Find a funding source for a conference in the December time frame that’s on repair capabilities.
5. Create collateral and a display for that conference.
6. Pilot of five companies for a reverse engineering service (Steps: scan, material analysis, quick mold, cast, Finish, and Test) with a certification process. This pilot would be sourced from other companies’ obsolete, alien, and stranger parts. The pilot would be for one prime.
7. Develop a plan for degree level education in Repair Technology.
8. Develop a mentor program in repair tradecraft to also be used to supply teachers for above curriculum.
9. Institute a mechanism to get business certified for doing military systems repair. It would be a repeatable process – common rules, tools, template, and procedures for small businesses to work together for proposal submission. This year would focus on a single prime command or command.
10. Win some early repair contracts for consortia of companies to show success.
11. Extend the list of potential Defense Assets services and support firms in the supply chain to see how large this team would be at a topical level.
12. Resolve Crane’s critical needs. Demand on Crane from within the military is outstripping the resources both inside Crain and at its subcontractors.

There is a dependency on entities outside this team to perform the following activities to meet this plan: a state marketing plan, training source for how to win DOD/DHS contracts and administrating them, hosting of the above planned database and a briefing on this report with the new university presidents and Ivy Tech’s new chancellor. The team expects that it will participate in the planning and support for these activities.

IN YEAR TWO:

1. Enlist and engage mentors in the mentor program.
2. Measure the performance of the focus action team in year one.
3. Prototype concurrent repair design with next new product at one prime. The concept is to provide “Total Care” not through repair, but through the lack of need for it.
4. Expand the reverse engineering service beyond one prime.
5. Obtain sustainable funding.

To meet the plan, there is a dependency on entities outside this team to perform continual enhancement of a database for locating potential partners and a situation alert system. The team expects that it will participate in the planning and support for these activities.

The focus action believes it needs to reach prominence for Indiana in two years, no more than three.

IN YEAR 3

1. Have an implemented program for a degree in Repair Technology.

IN FOLLOWING YEARS

1. Extend "Total Care" to legacy systems for a profit.

RECOMMENDED STAKEHOLDER ACTIONS

This focus area will depend on specific actions on the part of stakeholders within the state.

PUBLIC/PRIVATE DEFENSE ASSETS CONSORTIUM

- Facilitate better collaboration (meetings) between commercial companies, between universities, and Federal and State legislators to build relationships, catalyze efforts to address specific initiatives/contract opportunities, and discuss issues.
- Organize national meeting with government program managers and chief technology officers to learn about capabilities needed by DOD and Homeland Security and to familiarize them with Indiana assets.
- Create and manage a program for marketing Indiana as a defense technologies state.
- Work with Crane to tap into its acquisition authority, e.g., UAV payloads.

STATE GOVERNMENT

- Provide education for a small company new to defense procedures and terms. DOD contracts are requiring a larger portion of work to be done by small and/or minority-owned business.
- Institute a tax break for training costs.
- Institute a tax break for equipment needed to fulfill a DOD contract.
- Institute a tax break for cost of becoming certified to do DOD business that is permanent.
- Institute a tax break for establishing a unique US. Strategic capability, such as in magnets.

INDUSTRY

- Set up technology networking among academics and companies for specific areas.
- Move pieces of legacy support (e.g., depot services, testing) outside the gate to small businesses.
- Provide a mentor program for small businesses learning how to do business with DOD and Homeland Security.
- Be of assistance to small business in understanding standards, being certifiable and the processes to become certified.
- Have large companies communicate their process requirements to small businesses.

CRANE

- Provide on-site assistance to small companies involved in providing Product Life Cycle services, such as lab access, legacy production equipment, and testing labs.
- Administer access to the Crane Industrial Park.

ACADEMIA

- Develop Repair Engineering Curricula and Degree Programs from Associate to Bachelors to Masters levels. This curriculum must provide more general worker with a combined knowledge and tradecraft in manufacturing engineering, information technology, metallurgy, mechanical engineering, design engineering and technologist. Such education is expected to be a continuing experience.
- Create programs in repair engineering for providing interns to small businesses.
- Find and implement funding for Life cycle R&D.
- Provide university lab access and technical assistance to large and small businesses.
- Create a program for faculty to work in business for mutual exchange of knowledge.
- Improve the technology transfer process to release more technology for commercialization by commercial state assets without endangering the latter's competitiveness.

IMPLEMENTATION PLAN

ORGANIZATION AND SUSTAINABILITY

For ultimate success, this focus area must have some initial wins to show that collaboration is effective and to attract other companies, especially Small Businesses not yet doing business with the government, into the effort of gaining dollars from these customers. This means that the organizational structure has to avoid the heavy handed processes of the past in proceed in a self-organizing network manner.

METRICS

The following parameters are recommended as a source for three to seven vital performance measures:

- # companies involved in the team's initiatives
- Contract wins (#, value)
- Number of collaborations (difficult to quantify)
- New hires/sustained jobs from DOD
- Increase of certified company and percent

SUMMARY

Services and support already has a strong position in Indiana because of the manufacturing skills it has developed over the decades. That experience has mostly been on the production line with a tendency to acquire more specific knowledge and skills. However, the services and support focus now requires a more general approach that leans on collaborating with multiple people and firms to achieve a total solution for increasing integrated and complex components. A focus action team, such as the one recommended here, must achieve the following objectives:

1. Access to a central "consortium" that can manage marketing, the high level customer relationships, centralized infrastructure, a reputation for success, high level state relationships, and growth/renewal
2. Active, on-going programs to recruit, involve, and assist inexperienced SMEs in obtaining product life cycle support business
3. An improved process for getting IP out of Indiana Universities so that it can be commercialized

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4. A partnership of all the players with a strong teaming attitude and knowledgeable leaders acting as catalysts not overlords
 5. Attracting, retaining, and upgrading services and support knowledge and tradecraft

